Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Draft Conditional Major Permit No. F-01-026
TI GROUP AUTOMOTIVE SYSTEMS CORPORATION
P.O. BOX 100, HIGHWAY 356, CYNTHIANA, KY
December 19, 2001
KEITH METZKER, REVIEWER
AFS Plant I.D. # 21-097-00011
Application Log # G541

SOURCE DESCRIPTION:

TI Group Automotive Systems is a conditional major source that makes metal tubing. At the source, steel is shaped, welded, annealed, and leak tested. The tubes made may also be copper plated or coated with Galfan (an aluminum and zinc mixture) and paint. Prior to 2001 the source applied lead to some pipes. However, processes associated with the lead application (tinning and acid fluxing) have been eliminated. Overall, the source hasn't changed much in the past 20 years but the changes that have been made seem to be positive for the environment.

The division is issuing a source wide operating permit to clearly describe requirements applicable to this source.

COMMENTS:

Type of control and efficiency

Scrubbers are used to control emissions from the copper plating units and the acid cleaning prior to coating. The scrubbers have been assumed to achieve 90% control on particulate, acid, and hydrogen cyanide emissions. The assumed control efficiency is based on the manufacturer's estimate. For the copper plating units this seems to be a safe assumption since testing in February 2000 is used as the basis for controlled emissions.

The 3 wire brush machines are vented to a single cyclone followed by a fabric filter. Capture efficiency has been assumed to be 100% since emissions that are not captured will settle in the work area. The manufacturer estimates an overall particulate matter control efficiency of 99.84% with 84% control in the cyclone and 99% control in the fabric filter. Based on the manufacturer's estimate and the on-site evaluation of this reviewer, the manufacturer's estimated control efficiency has been assumed to be correct.

Emission factors and their source

All heat sources at the source use natural gas during operation. The emission factors for the natural gas combustion are based on AP-42, Chapter 1, Section 4 emission factors for small boilers.

Emissions from the wire brush machines are based on the AP-42 emission factor for uncontrolled cleaning and finishing operations at gray iron foundries. Based on the on-site evaluation of this reviewer, the AP-42, Chapter 12, Section 10 estimate seems representative or high. Therefore, the estimate has been accepted.

COMMENTS (CONTINUED):

Emission factors and their source (continued)

VOCs used in coating operations and rust prevention have been assumed to be 100% emitted.

Particulate matter used in the coating operations will not be emitted. This is because the coatings are applied in dip tanks and excess is blown back into the tank. The nature of this process is not to make particulate matter airborne.

VOCs used in parts cleaning are assumed to be 100% emitted unless the parts cleaning material is returned to the supplier after use or sent off for waste disposal, etc.

It should be noted that one of the copper plating units was non-operational during this reviewer's site visit and the unit will continue to have no emissions unless restored to operation. For the other copper plating units, particulate emissions will be generated during plating because mist will be entrained in the hydrogen and oxygen bubbles that the process generates. Since the emissions are solely from entrained raw materials, it is obvious that only a small percentage of the plating bath could be emitted. Additionally, the mists entrained will respond well to the scrubber. Therefore, hydrogen cyanide and particulate matter emissions from each copper plating unit are based on controlled emissions determined by the source during February 2000 testing. One should note that the testing done by the source in February 2000 was not done by EPA methods and was not approved by the division. However, based on the on-site evaluation of this reviewer and the above logic, the estimate that the source determined through testing seems reasonable. By back calculating using the plating solution make-up rate, 90% control efficiency, and the test results, the copper plating hydrogen cyanide and particulate matter uncontrolled emission factor was determined to be 0.00222 lbs/gal.

Emissions from the acid cleaning prior to coating or pickling units will be negligible. A low emission rate is present and a scrubber is present.

Emissions from pipe and tube cutting have been assumed to be negligible since any emissions generated will be minor and the emissions should remain in the work area and fall to the ground because of gravity.

Tank emissions have been neglected since the materials stored are mostly non-volatile or water.

Welding emissions are based on the AP-42, Chapter 12, Section 19 emission factor for welding rod electrode type E6011. This is because the welding at the source is shielded and the electrode type is common and has a relatively high emission factor. The emission factor is 76.8 lbs of particulate/ton of electrode consumed.

Applicable regulations

Regulation 401 KAR 59:010, New process operations, will apply to the 4 tube coating lines and the 3 wire brush machines since the affected facilities commenced after July 2, 1975. Application of the regulation will cause little impact on the coating lines since particulate emissions from the process are minimal.

401 KAR 59:185, New solvent metal cleaning equipment, does not apply to the parts washer because the source has taken permit limitations to remain below the regulation emission trigger level.

COMMENTS (CONTINUED):

Applicable regulations (continued)

Regulation 401 KAR 59:010 will also apply to the welding and pipe cutting operations since the operations have been assumed to commence after July 2, 1975. This is based on the source's citation of 401 KAR 59:010 as an applicable regulation on the list of insignificant activities. Application of the regulation will cause little impact because particulate emissions from the process are minimal.

401 KAR 59:225, New miscellaneous metal parts and products surface coating operations, does not apply to the coating lines because the source has taken permit limitations to remain below the regulation emission trigger level.

The boilers are not subject to 401 KAR 61:015, Existing indirect heat exchangers, because each boiler has a heat input capacity less than one million BTU/hr and they were commenced before April 9, 1972. Additionally, the boilers are not subject to 40 CFR 60 Subpart Dc, Standards of performance for small industrial-commercial-institutional steam generating units, because both boilers commenced before June 9, 1989 and neither unit is large enough to otherwise qualify for applicability to the standard.

The copper plating units are subject to 401 KAR 61:020, Existing process operations, because they were commenced before July 2, 1975. Additionally, the copper plating units are subject to 401 KAR 63:020, Potentially hazardous matter or toxic substances, since hydrogen cyanide is a likely emission. However, based on the data provided in the application, modeling shows that the risk will be acceptable (modeled concentrations from the units are far below the EPA Region 9 remedial goals) if the units are controlled by scrubbers.

The acid pickling units (coating pre-cleaners on coating lines 1 and 2) are not subject to 40 CFR 63 Subpart CCC, National Emission Standards for Hazardous Air Pollutants for Steel Pickling- HCl Process Facilities and Hydrochloric Acid Regeneration Plants, because the source is not major for hazardous air pollutants.

The storage tank is not subject to any requirements. 401 KAR 59:050, New storage vessels for petroleum liquids, does not apply. 40 CFR 60 Subparts K, Ka, and Kb do not apply because the tank storage capacity is less than 10,560 gallons. And, 401 KAR 61:050, Existing storage vessels for petroleum liquids, does not apply.

Regulation 40 CFR 64, Compliance assurance monitoring, does not apply since no control device is used to achieve compliance with an emission limitation except where the pre-control device emissions are potentially minor.

There is a future MACT for miscellaneous metal parts but it is not likely to apply when promulgated due to the low hazardous air pollutant potential at the source.

PERIODIC MONITORING:

Monitoring is not required for compliance with mass and opacity standards applicable at the source.

If all of the scrubbers are operated and maintained properly, the copper plating will not approach applicable limits. Uncontrolled emission rates are low by nature (mist entrained in hydrogen and oxygen bubbles) but when the control devices are operated and maintained properly, emissions become nearly negligible. A weekly inspection combined with regular maintenance should be sufficient to demonstrate that emission rates do not approach applicable limits. If uncontrolled emission rates were higher, more frequent monitoring may be warranted but compliance of these units does not require much control.

No monitoring is required for the pickling units since uncontrolled emissions from the units would not trigger a requirement.

Due to the coating process employed (dip coating), the coating lines will not generate significant mass or opacity.

The nature of the welding and cutting will also not cause mass or opacity problems. Each of the welding units will use only a few pounds of welding wire per hour and it would take around 60 lbs/hr to approach the applicable standard. Cutting emissions will be heavy enough to almost immediately fall to the ground in the work area.

Particulate matter emissions from the 3 wire brush machines will be minimal. If the baghouse controlling the emissions from these machines did nothing but act as a settling chamber, mass and opacity standards would be satisfied. Given proper maintenance and operation, compliance is assured.

Since there are no requirements applicable to other equipment present at the source, there is no required monitoring.

EMISSION AND OPERATING CAPS DESCRIPTION:

Operation and emission caps have been placed on the coating lines to make the source minor for VOC emissions. Other VOC emission points at the source have the potential to emit approximately 12 tons/yr. The 80 ton/yr VOC limit on the coating lines effectively limits the source to 92 tons/yr. By accepting these limits the source may demonstrate compliance on a monthly basis.

Other operation and emission caps are direct results of applicable regulations. See the permit for further details.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or record keeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.